

## Original article

# “Why are we being punished and they are being rewarded?” views on renewable energy in fossil fuels-based communities of the U.S. west

Shawn K. Olson-Hazboun

Graduate Program on the Environment, The Evergreen State College, 2700 Evergreen Parkway NW, Olympia, WA 98505, United States



## ARTICLE INFO

## Keywords:

Fossil fuels  
Community  
Renewable energy  
Public perception  
Just transition

## ABSTRACT

Renewable energy has emerged as one of the predominant means for addressing global climate change, as well as a remedy for energy workers and communities displaced by declining fossil fuels industries. However, little is known about how individuals living and working in fossil fuels-dependent communities perceive renewable energy and the low-carbon transition. To investigate this, semi-structured interviews were conducted with forty-five community representatives in 2016 in two energy-dependent areas in the state of Utah – one dependent on coal mining and electricity generation and one dependent on oil and natural gas extraction. Findings indicate that representatives overall had negative views of renewable energy development, driven mainly by the perceived threat to the existing local economy, the feeling that renewable energy was incongruent with local identity, and anger about policy incentives favoring renewables. These findings suggest that even though renewable energy development may offer an economic boost to declining fossil fuels-based communities, it may still be rejected in these places. The article concludes by weighing the implications of these findings under the ‘just transitions’ framework, which argues that the clean energy transition must address the plight of individuals and communities hit hardest by the shift away from fossil fuels.

## 1. Introduction

Addressing the problem of dangerous global climate change (Hansen et al., 2013) requires significant reductions in the amount of fossil fuels burned across major energy sectors. Incorporation of renewable energy technologies into the electricity production system is a key method for reducing greenhouse gas emissions, and growth in renewable energy capacity around the globe has been dramatic (IEA, 2017). This trend, while supporting climate change mitigation, bears ramifications for communities and workers employed in fossil fuels extraction and energy production industries.

Many point to renewable energy manufacturing and electricity production as the logical replacement for fossil fuels workers and local economies dependent on energy extraction. Recent news stories cite uplifting statistics, including reports that in the United States there are currently twice as many solar jobs as there are coal jobs (Korosec, 2015), and that wind energy jobs are close to outweighing coal jobs (US DOE, 2017). According to a Department of Energy report released in early 2017, while the number of both natural gas jobs (398,235) and oil jobs (515,518) remains higher than any one renewable energy sector, the number of solar, wind, and bioenergy jobs together (606,222) outnumber oil, gas, and coal (US DOE, 2017). These numbers appear to bode well in terms of replacement jobs for declining fossil fuels

communities and the affected workforce, but little is known about how these communities are responding to the prospect of renewable energy as an alternative source of economic opportunities. Though nationally representative surveys in the United States indicate a high level of public support for renewable energy (Leiserowitz et al., 2017a), tensions may be especially high in fossil fuels-dependent communities that feel increasingly vulnerable as the clean energy transition progresses.

This paper explores local views on renewable energy in two fossil fuels-dependent areas in Utah – one dependent on coal mining and coal-fired electricity generation, and the other dependent on oil and gas extraction. The questions driving this research are: 1) How do residents of fossil fuels-based communities perceive renewable energy generally? 2) How receptive are these individuals to the prospect of renewable energy development in their area, especially with relation to the local economy? 3) Are there notable differences in attitudes towards renewable energy based on which energy resource the community depends on (coal or oil/gas)?

Findings are based on analysis of semi-structured interviews with forty-five individuals representing a variety of local sectors across two study sites. Overall, findings indicate significant barriers to social acceptance of renewable energy in these fossil fuels-based communities, largely stemming from respondents’ concern that renewable energy itself would ‘wipe out’ the local economy, leading to even greater

E-mail address: [hazbouns@evergreen.edu](mailto:hazbouns@evergreen.edu).<https://doi.org/10.1016/j.exis.2018.05.001>Received 19 January 2018; Received in revised form 30 April 2018; Accepted 1 May 2018  
Available online 03 May 2018

2214-790X/ © 2018 Elsevier Ltd. All rights reserved.

population loss and community decline than is already happening. Additionally, respondents believed that policy mechanisms driving renewables unfairly favored clean energy while ‘punishing’ fossil fuels. Furthermore, though some respondents indicated general support for renewable energy, it was by and large perceived as incongruent with local identity, largely because it was viewed as part of a liberal political agenda. Perceptions varied between study sites, with respondents in the coal-dependent study site exhibiting more negative views overall toward renewable energy than those in the oil and gas-dependent area.

## 2. Public response to renewable energy development and policy

Research on public attitudes toward renewable energy has found widespread support amongst the general public (Greenberg, 2009; Klick and Smith, 2010; Leiserowitz et al., 2017a; Stoutenborough et al., 2015; Truelove, 2012). However, renewable energy development is often opposed at the local level, in communities adjacent to proposed or constructed facilities (Bell et al., 2013, 2005). The research examining opposition suggests contestation commonly arises from aesthetic and place-based concerns (Devine-Wright, 2011; Olson-Hazboun et al., 2016; Phadke, 2011), upset that the local community does not have a voice in how or where such systems are developed (Bohn and Lant, 2009; Haggett, 2011; Leitch, 2010; Pasqualetti, 2011), and misgiving about the distribution of benefits and the burdens (Garcia et al., 2016; Haggerty et al., 2014; Ottinger, 2013). To date, research has not focused explicitly on the influence that economic dependency on fossil fuels extraction or production may have on public attitudes toward renewable energy. Various aspects of economic dependency on fossil fuels may influence public attitudes toward renewable energy. These are reviewed below, followed by brief discussion of the role of political ideology in attitude formation with regard to renewable energy.

### 2.1. Economic dependency on fossil fuels

Economic reliance upon the fossil fuels sector may be an important driver of perceptions about renewable energy. Several studies have demonstrated that employment in the fossil fuels industry is related to energy and climate policy attitudes at both the individual and collective levels (e.g. Boudet et al., 2016; Cragg et al., 2012; Mukherjee and Rahman, 2016; Tvinneim and Ivarsflaten, 2016; Zahran et al., 2008). Residents of communities that are economically dependent on fossil fuels may be more supportive of these industries than the public at large, and they may also feel particularly threatened by the societal shift toward clean energy. Even if individuals themselves are not employed in the local fossil fuels sector, it would be reasonable to expect they would support fossil fuels if they live in a community where such industries prop up the local economy and provide family-wage jobs for friends and neighbors (Freudenburg and Davidson, 2007). There is evidence for this idea at various scales of analysis (Boudet et al., 2016; Gravelle and Lachapelle, 2015; Mukherjee and Rahman, 2016; Kriesky et al., 2013; Jacquet, 2012; Rabe and Borick, 2011; Stedman et al., 2012; Theodori, 2009).

Several studies have highlighted how local leaders and individuals in energy-dependent communities are often very supportive of continued extractive activities, even though they regularly experience negative impacts characteristic of this type of industry, including ‘boom and bust’ cycles of job and population growth and loss, long-term poverty, and impacts on environmental and public health (Ceresola and Crowe, 2015; Freudenburg, 1992). Energy-dependent communities are often economically vulnerable, and thus allegiance to existing or proposed fossil fuels development is based on hopes for economic development (Silva and Crowe, 2015). Local economic vulnerability can stem from factors such as geographic isolation from larger population centers, isolation from transportation routes, lack of economic diversity, population loss and ‘brain drain’ (Mayer et al., 2018), and lack of access to workforce education and training opportunities.

Additionally, energy-dependent communities tend to be ‘overadapted’ to certain types of industries and skills, making it difficult to envision and implement changes as larger economic and production systems shift around them (Gramling and Freudenburg, 1992). These types of structural economic vulnerabilities often translate into continued support for the types of industries that have driven the economy in the past (namely, fossil fuels extraction and energy production).

### 2.2. Local economic identity

Local support for fossil fuels industries may also be a product of local identity, formed around a locally dominant industry such as oil drilling or coal mining (Bell and York, 2010; Ceresola and Crowe, 2015; Dampier et al., 2014; Evans and Phelan, 2016; Silva and Crowe, 2015; Lewin, 2017). Ceresola and Crowe (2015) found in their study of individuals living near the New Albany shale that “...proponents use their histories within a town and experience with extractive industry to frame shale development positively...proponents consider themselves tied into their communities in ways that make the only logical decision to be supportive of shale development” (p. 81). Likewise, Evans and Phelan (2016) argue that “...coal mining has provided material well-being and led to particular habitual, institutional, and discursive formations in the region that have formed ‘mining’ identities of individuals and communities” (p. 332). Bell and York (2010) found the same to be true in coal communities within Appalachia, where strong community identity and related cultural associations were strongly tied to historic economic reliance on the coal industry.

These dynamics of culture and identity may also influence how individuals in energy-dependent communities perceive renewable energy, though there is very little research on this topic. Though reliance on fossil fuels is clearly tied to continuing support for fossil fuels-based industries, few if any studies have examined how this is related to support for or opposition to development of other energy sources. In one study, Goldfarb et al. (2016) found that individuals living closer to coal-fired power plants were more supportive of policies encouraging the growth of renewable energy than individuals living farther away, which the author attributes to heightened concern about pollution from these plants. No other studies on this topic were located, indicating a pressing need for more research. On one hand, residents of fossil fuels-dependent areas may feel threatened by renewable energy and the low-carbon transition. On the other hand, residents of these places are could benefit from renewable energy development through construction jobs, lease payments to landowners, and increased local tax revenue.

### 2.3. Political ideology and support for the free market

Political ideology and political party affiliation are strongly related to public opinion about energy in general (Boudet et al., 2016; Boudet et al., 2014; Cacciatore et al., 2012; Clarke et al., 2016; Delshad and Raymond, 2013; Goldfarb et al., 2016; Larson and Krannich, 2016; Mukherjee and Rahman, 2016). Political conservatives often support fossil fuels over other energy sources because of concerns about job losses, support for industries reliant on cheap fossil fuels, and support for free-market ideology. Conversely, political liberals often oppose the development of fossil fuels due to environmental concerns, including concerns about global climate change (McCrigh and Dunlap, 2011). A partisan divide sometimes appears in the case of renewable energy, with individuals who identify as Democrats or politically liberal being generally more supportive of renewable energy (Carlisle et al., 2015; Goldfarb et al., 2016; Hess et al., 2016), and with the divide over policies supporting emerging cleaner energy technologies widening between political leaders over the last decade (Goldfarb et al., 2016). However, recent nationally representative surveys have found a high level of support for renewable energy amongst both Republicans and Democrats in the United States (Leiserowitz et al., 2017a). This

bipartisan support is reflected as well as in state-level analyses of Utah (Howe et al., 2015) and even amongst Utah Republicans specifically (Mildenberger et al., 2017). However, the extent to which renewable energy policies are connected to climate change mitigation may incite additional political polarization, since the partisan divide on climate change has escalated in the United States in recent years (Leiserowitz et al., 2017b; Mildenberger et al., 2017; Marquart-Pyatt et al., 2014; Egan and Mullin, 2017).

Adherence to free-market ideology may offer a more complete explanation for the political divide on renewable energy than simple political party divisions. Underlying free-market ideology is the assumption that the market, not the government, will provide the greatest good for society because it is able to self-regulate against social or environmental ills (i.e., the “invisible hand,” Smith, 1776). Thus, individuals supporting a free-market system typically support the deregulation of business and tend to be less concerned about the effect of the economy on the environment (Jackson et al., 2013; Longo and Baker, 2014; Heath and Gifford, 2006).

Because fossil fuels continue to enjoy dominance in the global energy economy (Evans and Phelan, 2016; Ladd, 2017), renewable energy development in places like the United States is dependent on federal policy interventions to foster growth. These interventions include tax incentives, research grants, and state-level mandates requiring renewable energy use by electric utilities (Gan et al., 2007; Komor, 2004; Menz, 2005). For individuals who embrace a neoliberal worldview, such interventions are viewed as unsavory, unnecessary manipulations of the free-market system. In this case, policies funding renewable energy research and development may be viewed as government ‘give-aways’, privileging one industry while wrongfully penalizing another (Carlisle et al., 2015; Chassot et al., 2014; Klick and Smith, 2010).

### 3. Methods

#### 3.1. Description of study sites

Two study sites in the state of Utah were chosen to represent the

fossil fuels-dependent context – Emery County and Uintah County (see Fig. 1). Utah is rich with fossil fuel resources and ranks 10th in the country for natural gas production, 11th for oil production, and 14th for coal production (Utah Governor’s Office of Energy Development, 2017). While study sites are identified using county names, the sample for each site is not representative of the entire county but instead focused on several communities geographically clustered around each county’s fossil fuels activity.

##### 3.1.1. Emery county: coal mining and coal-fired power plants

Emery County is located in central Utah. Coal mining has been present in the area since the late 1800s and played an increasingly large role in the local economy throughout the 1900s. The Economic Research Service (ERS) of the US Department of Agriculture classifies Emery County as a mining-dependent county, which it defines as a county in which the mining industry accounted for “an annual average of thirteen percent or more of total county earnings or eight percent or more of total county employment from the years 2010–2012” (ERS, 2015). In the 1970s, several large coal-fired power plants were built in the area, providing further employment opportunities. Local coal mining has demonstrated a ‘boom and bust’ economic cycle over the decades, and in the last ten years it has seen a significant decline in terms of numbers of mines shutting down and subsequent job losses. Conversely, the coal-fired power plants have provided relatively stable employment, though one was recently shut down.

Emery County is one of the largest counties in Utah, and its major towns are about an hour apart. The sample is drawn from communities in the northwestern part of the county where the coal mining activity is concentrated and where two coal-fired power plants are located. The county seat, Castle Dale, is located in this area and is approximately 150 miles from Salt Lake City, the nearest major metropolitan area. Emery County is remote, rural, and sparsely populated. A major interstate bisects the county but is located relatively far from the communities under study. Table 1 displays key demographic information for both Emery and Uintah County, compared to the state of Utah. In 2015, the population of Emery County was estimated at 10,728 and the

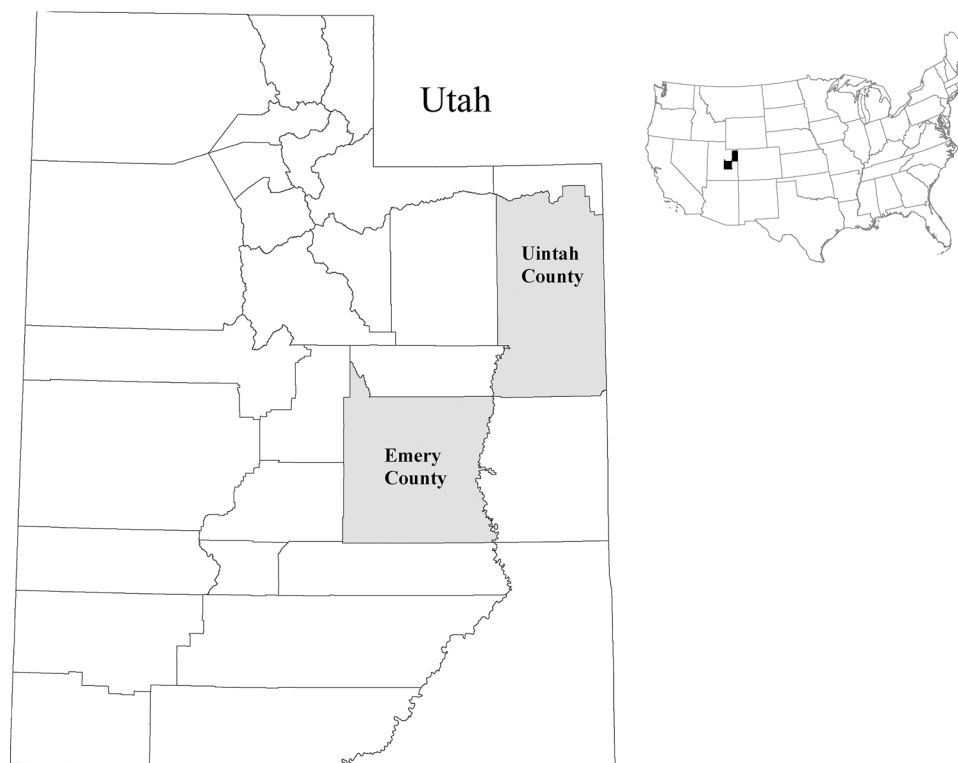


Fig. 1. “Map of the two study areas.

**Table 1**  
County and state demographic characteristics.

	Emery County	Uintah County	State of Utah
Dominant Energy Activity	Coal	Oil and Gas	–
ERS Mining Dependent County (1974 and 2015) <sup>a</sup>	Yes	Yes	–
County Population: 2015	10,728	35,721	2,903,379
Population Density (persons per square mile): 2015	2.4	8.0	35.3
Median Household Income: 2015	\$49,787	\$66,815	\$60,727
Per Capita Income: 2015	\$19,717	\$24,720	\$24,686
Unemployment Rate: 2015	5.7%	5.1%	5.8%
Bachelor's Degree or higher: 2015	12.6%	15.9%	31.1%
Poverty Status for Population Age 18–64: 2015	10.4%	9.4%	6.5%

Source: American Community Survey 5-year Estimates (2015). US Bureau of the Census.

<sup>a</sup> USDA Economic Research Service County Typology Codes; “mining-dependent” classification indicates counties that are economically dependent on the mining sector.

unemployment rate was on par with the state average of 5.8%, though the poverty rate was much higher than the state average (6.5%) at 10.4% (ACS, 2015).

### 3.1.2. Uintah county: oil and gas extraction

Uintah County, located in northeastern Utah, is a hotbed for oil and gas extraction. Like Emery County, over the last few decades Uintah County has experienced the boom and bust cycle characteristic of energy-dependent communities. Uintah County experienced the energy boom of the late 2000s, with the county’s annual oil production doubling from 2001 to 2011 and annual natural gas production tripling in the same time period (ERS, 2016). Over the last five years or so, however, the county has felt the economic decline related to significantly decreased energy development activity. Uintah County is also classified as a mining-dependent county by the ERS. It is also well known for several protected areas and outdoor recreation sites, which draw tourists from around the country and contribute to the local economy through the service industry. Uintah County is isolated from major transportation corridors and has only a two-lane state route bisecting it and no major interstate. The communities of focus cluster in the northern half of the county and are all 150–170 miles from Salt Lake City.

As of 2015, the population of Uintah County was estimated at

**Table 2**  
Respondent profile.

	Emery County	Uintah County	Total
Respondents			
Total respondents	22	23	45
Total interviews	19	22	41
Males	17	19	36
Females	5	4	9
In-person interview	17	16	33
Phone interview	5	7	12
Sectors Represented			
County & City Government	11	11	22
Business & Economic Development	5	6	11
Education	5	2	7
Agriculture	2	3	5
Religion	1	2	3
Energy Development	7	6	13

Note: In several cases, individuals were able to speak as representatives of two sectors (for example, if an individual was a county commissioner and also operated a ranch, they could speak as a representative of local government as well as local agriculture).

35,721 (ACS, 2015) (See Table 1). The median household income in 2015 was higher than the state average at \$66,815, most likely due to the prevalence of high-paying energy jobs. Unemployment was slightly lower than the state average at 5.1% and the poverty rate was 9.4%, three percent higher than the state average.

### 3.2. Sampling, data collection, and analysis

Semi-structured interviews were conducted with forty-five respondents across both study sites. A sampling strategy was chosen to represent six local sectors or local “social fields” (Wilkinson, 1991) in each of the two locales: government, education, business, agriculture, religion, and energy. Both individuals both holding leadership positions as well as non-leader individuals were sampled, with the overall goal to represent a broad range of views across the each study site. Included were individuals representing and/or working for county and city governments (elected and non-elected positions), school districts, and business-focused organizations such as chambers of commerce and offices of economic development. In addition, several local business owners were sampled in each study area, as well as individuals engaged in local agriculture (farmers), religion (pastors), and local fossil fuels industries (both managers and lower level workers). Table 2 provides a brief profile of respondents across both study sites.

Potential respondents were first identified based on information publicly available on the Internet, specifically through information provided through county and city government websites, local chambers of commerce, and local economic development offices. Potential respondents were phoned or emailed with a request for an in-person interview, provided with information about the study, and offered a \$25 gift certificate for participating. Initial contact with each individual was attempted up to three times; when three attempts were made to reach an individual with no success, communication was ceased. In many cases, individuals recommended others who they thought would want to participate and either passed on the researcher’s contact details or provided direct contact information. Thus, several additional individuals were sampled through referrals whose contact information would not have otherwise been accessible to the researcher.

Research trips were made to both study sites in the fall of 2016.<sup>1</sup> About three-fourths of the interviews were conducted in-person and a little over one-fourth were conducted over the phone. In a few cases, respondents brought along other individuals to the interview that they thought would have valuable insights; thus, some interviews were conducted with more than one individual at a time (see Table 1). Frequently, a respondent represented more than one sector – for example, a local priest who was also a farmer, or a county official who also owned a local business.

The interview process involved the researcher guiding respondents through an interview protocol consisting of seventeen open-ended questions (please see Supplemental Materials for the full interview protocols for both study sites). The questionnaire varied slightly across study sites since the energy context of each varied. Interview questions were broad and asked respondents to explain their perspective on several topics including recent changes in the local energy-based economy, views on renewable energy (and whether renewables could bolster the local economy), general political preferences, and views on climate change. This open interview approach, asking broad topical questions, was chosen because this research was part of a larger project analyzing perspectives of renewable energy across four counties across Utah, two of which were energy-dependent counties (Emery and Uintah) and two of which were not. This paper covers themes that arose

<sup>1</sup> The interviews in Emery County were conducted from October 2–8, 2016, and the interviews in Uintah County were conducted from October 16–23, 2016. Several additional interviews were conducted by phone after these dates. All interviews were completed by mid-January 2017.



prominently in relation to the energy-dependent context of Emery and Uintah Counties; a broader analysis of views on renewable energy across all four counties is being written as a separate manuscript, with emphasis on the relation to general environmental views, beliefs about climate change, and political ideology. This detailed analysis of Uintah and Emery Counties was justified because responses (the themes identified below) were so ubiquitous across respondents and contextualized within the setting of energy dependence.

All interviews except one were audio-recorded and lasted between thirty and ninety minutes. Each interview was fully transcribed word-for-word and spot-checked against the audio recordings for accuracy. Pseudonyms were used to protect respondents' privacy. Transcriptions and field notes were uploaded into the Nvivo 11 software program, and interviews were analyzed in this environment.

Results were drawn using a thematic analysis approach (e.g. Braun and Clarke, 2006). This entailed a coding process in which each transcript was read for any themes that related to the three research questions: 1) How do residents of fossil fuels-based communities perceive renewable energy generally? 2) How receptive are these individuals to the prospect of renewable energy development in their area? 3) Are there differences in renewable energy views between communities? Any themes that were related to the interaction between respondents' views on renewable energy and their dependence on fossil fuels were analyzed; beyond this specification, no preset or closed codes were used. The following themes arose from the thematic analysis process: *renewable energy as a threat to the local economy*; *renewable energy as incongruent with local identity*; and *renewable energy as unfairly rewarded*. One additional theme emerged from the coding of Emery County interviews: *getting beat up over coal*. These themes are discussed in the next section.

#### 4. Findings

Overall, respondents across the two study sites had mixed views about renewable energy, with representatives of Emery County (the coal study site) more frequently articulating negative views, and representatives of Uintah County expressing more ambivalence (see Table 3). Findings revealed that three main factors impeded respondents' support for renewable energy, including the perception that renewable energy represented a threat to the local economic structure, the perception that renewable energy was incongruent with local identity, and the belief that renewable energy has been given an unfair advantage overall fossil fuels via various policy mechanisms. Though some respondents considered the potentially positive economic impact of renewable energy development locally, most were skeptical about this. Additionally, respondents in Emery County felt especially down-trodden by the larger transition to cleaner energy and were both frustrated by what they perceived as lack of public understanding about coal and dejected about the political 'attack' on coal. Detailed findings are presented below.

##### 4.1. Renewable energy as a threat to the local economy

Almost every respondent described their local economy as challenged. Most often, respondents attributed this to the lack of economic diversity, lack of jobs, and the rurality and geographic isolation of each place from major population centers, though population decline, lack of

**Table 3**  
Profile of respondents' overall attitudes on renewable energy.

	Mostly positive	Mostly negative	Mixed
Emery County (Coal)	6	9	7
Uintah County (Oil & Gas)	5	1	17
Total	11	10	24

access to major routes for commodity transport, lack of a skilled or diversified workforce, insufficient or declining tax revenue, and the proportional amount of public lands versus private lands (limiting resource extraction activities) were also frequently mentioned.

In both study sites, many respondents expressed a desire for a more diversified local economy that could buffer the effects of energy booms and busts. Harold, an elected official in Uintah County, described their economic woes as being due to "an all or nothing economy" in which the strategy is just to "hang on" when times are tough. Most of the public officials interviewed were actively working to attract new types of businesses. When asked if they thought renewable energy development could help diversify the local economy, respondents were generally skeptical. The same elected official quoted above said: "Sure, wouldn't it be lovely if we had clean energy sources that actually worked? I think that would be great. But, of course, it would kill our economy." Jay, a public official in Emery County, described doubt about how many jobs renewable energy development would actually add: "Solar and wind are pretty close to the same in impact. They produce very few jobs. So even if we bring [a solar or wind energy facility] in, the ten people that lose their jobs at the power plant, only one of them is probably going to get hired [in renewables], because they only need one person to maintain it. So they're very low on jobs." Tina, a leader in the local school system in Emery County, remarked that "they are also looking at putting solar farms in, which would be devastating, devastating to our community, in that you give up large portions of your farm ... it doesn't really produce any jobs, it just takes that portion of the farm away..."

This perception was pronounced in Emery County. Respondents indicated that adding renewable energy facilities to the local area was a sort of zero-sum game in that additions of renewable energy facilities would translate directly into the shutdown of coal mines and coal-fired power plants. Noah, who was involved with the school district, put it this way: "I'd like to see more renewable energy, even right here in Emery County. But at the same time... I don't think that shutting down coal leases and, you know, creating havoc in small communities is the way to do it." Speaking of a recent initiative to put solar panels on a museum, Randy, an elected official, recounted this story: "The mayor... he said absolutely, positively not. You will not put solar panels on anything, solar panels take food out of the mouths of the miners." Thomas, who works in education and who is also a religious leader, indicated that local people feel "resentment toward renewable energy" and that he thinks "there would be some cultural opposition if something like [renewable energy] were proposed for the area." He explained "I think it's natural, because they're seeing that kind of industry as taking away from the coal industry."

Doubts about renewable energy's economic potential were slightly offset with some hopefulness toward renewable energy. As Chris, a local government employee in Uintah County, explained "[I]f a company wanted to come in and do a renewable energy project, I think we would, you know, open our arms to them. I don't think people would be upset...it would be, you know, a double benefit of it for us, to have both kinds of energy being developed." By and large, however, renewable energy was perceived as a direct threat to local economic wellbeing.

##### 4.2. Renewable energy as incongruent with local identity

An 'us' versus 'them' element pervaded respondents' feelings toward renewable energy across both study sites that spoke to issues of identity. Anitra, a business owner and city elected official in Uintah County, describes how local people identified strongly with the history and culture of oil and gas extraction:

"[W]e'd be open to [renewable energy] if you know if it's going to create jobs ... you've got people really torn because they are fossil fuels people and that's what they've been their whole lives, and their parents and their grandparents. So it's hard to make that mind shift

... we feel like the federal government has just shoved the renewables down everybody's throat. And we're fighting. We're fighting for fossil fuels, you know, we feel like they're becoming really attacked ... the more they're doing with renewables, and to me really shunning the fossil fuels, is putting down in people's minds that if they want to they really could shut this down."

For others, the identity issue had more to do with politics and the feeling that renewable energy was a political agenda of Democrats and liberals. Chris, a local government leader in Uintah County, said:

"It was the Democrats, and frankly it's still the Democrats, that are pushing green energy. Renewable energy versus oil, gas, coal. I remember when President Carter was elected, before he took office. The oil companies in this area, and gas companies, were very concerned about, you know, where we were going with the development of domestic fuels and domestic resources. And before we had, the Bushes, and you know, all of that. It was good, but when the Democrats took over, the change... the administration was certainly a change in philosophy as to what we should be doing as to developing energy."

Mary, a business owner in Emery County who was generally supportive of renewable energy, still felt that it could draw an undesirable crowd and have a negative impact on the local economy: "You bring in renewable energy, you bring in the tree huggers, you bring in [Democrats], they shut down the coal mines and we're done."

Respondents frequently described their view that liberals were the largest threat to the local economy, and that renewable energy was simply one of the mechanisms by which liberals were hurting fossil fuels communities.

#### 4.3. Renewable energy as unfairly rewarded

The majority of respondents talked about renewable energy using politically charged economic terminology. This included strong support for free-market capitalism, especially reduced government influence in the market, and reduced regulations for natural resource companies. These principles were heralded as respondents expressed upset over federal tax incentives and research grants for renewable energy, as well as state renewable energy mandates. Respondents saw these types of policy tools as unfairly prioritizing one energy source over the other and described this as an inappropriate manipulation of the free-market system. Liam, a public official in Emery County, argued that all business enterprises should operate on a 'level playing field': "I'm very much against government being involved in making decisions on what industry should win and what industry should lose...I don't think that anyone should get subsidies. Alex, a religious leader in Uintah County, further described the source of local anger: "...why is there a push on or against energy of fossil fuels and yet subsidies are being given towards renewable energy? And if renewables are so great and renewables are going to work, we're all for that. But why are we being punished for that and they are being rewarded?"

By and large, respondents across sectors and communities were in favor of 'leveling the playing field' for energy markets, which for them meant not prioritizing renewable energy with favorable policy incentives.

#### 4.4. Emery county: getting beat up over coal

Respondents in Emery County spoke much more of desperation and fear with regard to the future of their local economy than did those in Uintah County. This feeling was underlain with the belief that coal was being attacked by the country as a whole. Emery County respondents were also notably more negative toward renewable energy. This section thus focuses on Emery County.

Respondents in Emery County reported frustration and sadness that,

in their view, coal had become highly villainized by the government, environmental groups, and the public. Leanne, who worked in the local coal industry in Emery County, said, "It feels like coal is just getting singled out and picked on." Trevor, an elected official in Emery County, also spoke to this: "It seems like all of the sudden this last five years that it's almost like... if someone stubs their toe, it's the fault of coal."

While respondents unanimously pointed to the societal disparaging of coal and the associated negative impacts on the local area, not one acknowledged potential environmental or health impacts from the local coal mines or coal-fired power plants. Louis, who worked in local government and education, remarked, "Smog, we just don't have it here...you talk about the environmental impact of all this coal stuff, it doesn't hit us here. So we're having a hard time grasping and understanding those concepts that the nation wants us to, environmental controls." Aiden, a local business owner, echoed this sentiment: "They don't understand that our power plants are under certain regulation for CO<sup>2</sup> and emissions, and they're actually well under those standards. So it's a misperception... you feel like you're getting beat up for no reason, and your jobs are going to be taken away for no reason."

Respondents cited multiple reasons for why they thought coal was being targeted. John, a business owner and local government official, felt this was due to the public's (mis)perception about the dangers of coal mining: "[Coal] gets a bad rep because of the tragedies when there is a cave in and people can't get out ...But overall it's a very safe industry." Others believed the villainization of coal was primarily coming from environmental organizations. Ben, who works in agriculture and is a local government leader, articulated this:

"There has been a concentrated effort to manipulate how fossil fuel drives energy, is implemented, and the impact it has...There has been a concentrated effort to paint a picture of [the impacts of] fossil fuels, and specifically coal. And a lot of that has been disingenuous. In fact, the extreme, and I'll just say it like it is, some of the extreme environmental organizations lie about it and fabricate statistics."

Stephanie, a government official in Emery County, felt that coal was villainized because it was the 'easiest target' – that is, that it's much easier to shut down a coal plant than to get people to stop driving:

Stephanie: "[T]hey're going after one industry, the coal-fired industry [but] to go after one industry and say you're causing all this problem is a farce... If you want the climate to clean up and to change, you better get rid of everybody off the earth."

Interviewer: "So why do you think they're going after coal?"

Stephanie: "Because it's the easy one."

Interviewer: "Why is it the easy one?"

Stephanie: "It's the catch word because it's dirty. Because how are they going to shut people down with their cars?"

By and large, the perception that coal was unjustly 'under attack' seemed to underlie a tone of frustration, fear, and despair in Emery County. One respondent succinctly summed up what many residents in the local area felt about the future: "I would say that everybody is terrified." Respondents not only cited unemployment and associated impacts on local businesses, but also population decline, impacts to the real estate market, concern about energy reliability, and psychological depression. Jay, who works in local government, discussed some of the outcomes of this despair:

"You watch a friend or two spend time at the bar...you can tell that it starts depressing [them], especially that young coal miner who started his career thinking now he's got it made to raise his family, and all the sudden his bubble's bursting... Even though they have opportunities to go somewhere else, they don't. Some of those people say, 'my family's here, I'm going stay here.' But they don't

find work and they start pulling on lots of unemployment or picking up a few jobs...they hit that depression stage, and then it's like psychologically they're beat up. They lost the hope and they lash out in other ways...the use of substance."

Some respondents also cited concern that if coal was taken away, the nation would no longer have a reliable energy system. Liam, a government official, said: "It's distressing to the community at large... We want to just grab society by the shoulders and shake them and say 'don't you realize what you're doing?' Because the more you push to shut down coal mines, you're shooting yourself in the foot. You're going to create a shortage...all the sudden it's going to be rolling brownouts across the country."

Respondents recounted past cycles of layoffs and mine closures, which all brought hardships. However, respondents overall felt that this economic downturn was somehow different in its extent and permanence, and this translated into heightened insecurity and fear about the future that was more difficult to deal with both individually and collectively.

## 5. Discussion and implications

The objective of this research was to examine how residents of fossil fuels-dependent communities perceived renewable energy and the broader transition toward a low carbon energy system. Findings indicated mixed views about renewable energy overall, with feelings such as skepticism, frustration, and fear being prominent among negative responses. A number of factors drove negative attitudes toward renewable energy. First, respondents saw renewable energy as a threat to the existing local economy, which was already declining. Second, representatives felt that renewable energy was not congruent with local identity, based on the history of fossil fuels activity as well as political and economic beliefs. Third, representatives saw their local fossil fuels industries as being unfairly punished by policies encouraging renewable energy, such as tax incentives and state renewable portfolio mandates. This research also revealed collective despair about the future in the coal-dependent communities of Emery County, which was related to overwhelmingly more negative views of renewable energy than in Uintah County.

This research highlights the real struggles currently experienced in declining fossil fuels communities, especially those dependent on the coal industry. The question of how to combat unemployment and related community distress from declines in fossil fuels sectors is a major policy challenge in the era of energy transition. Many scholars, policymakers, and labor activists feel that the most equitable way forward is to act according to the principles of the 'just transitions' concept. The idea of 'just transitions' was pioneered by the Canadian Labour Congress (CLC), proposing that in the shift toward a more sustainable society, "the costs of environmental change [should] be shared fairly" (Canadian Labour Congress, 2000: 3). Put another way: "It's not fair that a small proportion of workers and communities should be left as economic road-kill by policies adopted to benefit society as a whole" (Makhijani, 2016: 3). Attention to the 'just transitions' idea by scholars and trade unions has been mounting recently, with calls for more research and policy focus on the problems facing declining fossil fuels communities (Carley et al., 2018; Johnstone and Hielscher, 2017).

Respondents in both Emery and Uintah Counties identified renewable energy as one of the main reasons that the local economy was challenged. As fossil fuels-dependent communities continue to struggle in the era of energy transition, resentment toward low carbon energy alternatives and associated policies and proponents will continue to build. As such, one implication of this research is that marginalized energy communities are likely to continue to align with fossil fuels industries unless they are genuinely engaged in the decision-making and benefit-sharing processes of the low carbon transition. Excluding or ignoring these communities will only serve to further entrench existing

divisions and encourage further opposition toward sustainability initiatives (Evans and Phelan, 2016; Johnstone and Hielscher, 2017).

Respondents in the coal communities of Emery County especially expressed a particularly bleak outlook, indicating that they were dealing not only with economic hardship but also with issues of depression, anger, and the feelings of being shunned and forgotten by their federal government, state government, and fellow US citizens in the societal push toward clean energy. The differences noted between the Emery and Uintah Counties in terms of the level of economic desperation as well as attitudes toward renewable energy are likely related to the differences between the energy source each relies on. For one thing, coal plants across the country continue to be scheduled for retirement or are targeted for conversion to natural gas electricity production – a pattern noted by residents in Emery County. Second, while oil and natural gas are used in a variety of energy applications, coal is only used in the generation of electricity and is therefore in direct competition with renewable energy systems. Thus, a second implication of this research is that coal-based communities will need more immediate attention, in terms of both engagement and direct aid, than communities reliant on other fossil fuels.

A third implication of this study is that the question of how to support fossil fuels communities in the energy transition deserves rapt scholarly and political attention. While renewable energy development might be one way to help these communities (e.g. Evans, 2007), it will not be the end-all solution. Employment potential in the renewable energy sector is steadily climbing – a recent study found that for every one million dollars of investment funds shifted from brown to green energy, a net increase of five jobs are gained (Garrett-Peltier, 2017). However, several considerations are pertinent for isolated, small energy-dependent communities. First of all, in order to retrain and obtain employment in the renewable energy sector, workers will most likely have to relocate, leaving their community and thus contributing to community decline, rather than ameliorating it. Many of the jobs in renewable energy exist in the manufacturing sector, and these jobs are typically located in urban areas with greater access to workers and transportation options, not in the rural settings typical of energy extraction. The geographic coincidence of utility-scale solar or wind resources with fossil fuels extractive areas is not a given, with some research suggesting low potential for this (Haerer and Pratson, 2015). Secondly, even if a renewable energy facility were sited in a formerly coal-reliant community, the number of permanent jobs created would be relatively small compared with employment in coal mines and coal-fired power plants – except for an initial construction period, renewable energy facilities require relatively few full-time workers to operate and maintain. Third, though guidelines exist for equitable benefit-sharing structures that could make a significant difference in isolated economies (Cass et al., 2010; Gross, 2017), such as turbine lease payments to landowners and neighbors, as well as benefit sharing with entire host communities, wind energy developers in the United States rarely extend beyond the traditional landowner lease payment model.

Policy mechanisms will be needed to fund worker retraining and relocation, and to directly aid local governments struggling to fund infrastructure and community services as local fossil fuels industries vacate. Various policy proposals have been put forth, including Senator Bernie Sanders's (D-Vermont) Clean Energy Worker Just Transition Act, introduced in December 2015, which would have provided benefits and services to energy workers unemployed due to the clean energy transition. Most policy proposals argue in favor of federal funding structures to support worker retraining, relocation, and early retirement (Morris, 2016; Richardson et al., 2014), as well as provision of direct aid to struggling energy communities facing huge losses in tax revenue (Makhijani, 2016). However, none of these proposals have been passed, likely because they usually rely on funding sourced from a carbon tax (e.g., Morris, 2016), which is politically controversial both because of its link to climate change and because Republicans see this as a manipulation of what should be a 'free' market system. This research

suggests that partisanship itself could be limiting in that policy initiatives seeking transition aid and planning for fossil fuels communities, led by Democrats, would be viewed unfavorably by the very people they seek to support. One implication of this is that policy action on this issue is likely to be most successful if it can be seen as non-partisan or unilateral effort.

There is additionally the issue of how renewable energy would be received within fossil fuels communities. This research highlighted how residents in both communities saw renewable energy not only as a product of a leftist movement, but in and of itself as an affront to local culture and identity, which are intertwined with the prominence of fossil fuels in the local economy. While it is possible that bipartisan support amongst political leaders for renewable energy in coming years could address the political aspects of cultural rejection of renewables in places like Emery and Uintah counties, there are deeper roots of culture and local identity that will be harder to resolve. For example, as some respondents revealed, renewable energy is seen as an energy source pursued by “tree huggers” – and so renewable energy itself is seen as a symbol of environmentalism, which is a four-letter word in many rural, Western communities (McCarthy, 2002) as well as within much of the political right (Hoffarth and Hodson, 2016). Furthermore, the “habitual, institutional, and discursive [identity] formations” (Evans and Phelan, 2016) following decades of reliance on fossil fuels extraction mean that local leaders may fail to pursue or outright reject new opportunities related to renewable energy, thus missing out attaining any points of leverage in the new energy future. This could unfortunately mean that communities that have already been marginalized for decades by economic instability related to the boom and bust economy of fossil fuels, will become even more marginalized by the clean energy transition.

## 6. Conclusion

The present study suggests that individuals living and working in fossil fuels-dependent areas see the low carbon energy transition as villainizing the basis of their economy, severely impacting community wellbeing, and generally leaving them behind, forgotten and disregarded. These views appeared to direct translate into negative attitudes toward the proponents, policies, and possibility of renewable energy. Further research is needed to illustrate viable pathways toward a socially just energy transition that address the needs of declining fossil fuels communities and identify avenues by which renewable energy and other components of the energy transition could aid, not hinder, struggling local economies.

## Funding

This work was supported by the Utah State University Office of Research and Graduate Studies [Dissertation Enhancement Grant, 2016], Logan, UT.

## Acknowledgements

The author would like to thank the organizers of the 2017 Energy Impacts Symposium for providing a conference fellowship to present and receive feedback on this research. Additionally, the comments and suggestions of two helpful and supportive anonymous reviewers were very appreciated during the journal review process. Funding for this research was provided through a Doctoral Dissertation Enhancement Grant through the Office for Research and Graduate Studies at Utah State University. This study was approved by the Institutional Review Board at Utah State University on June 7, 2016, Protocol #7492.

## Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the

online version, at <https://doi.org/10.1016/j.exis.2018.05.001>.

## References

- American Community Survey, 2015. U.S. Census Bureau's American Community Survey Office. (Available at: <http://factfinder2.census.gov>).
- Bell, Shannon E., York, Richard, 2010. Community economic identity: the coal industry and ideology construction in west virginia. *Rural Sociol.* 75 (1), 111–143.
- Bell, Derek, Gray, Tim, Haggett, Claire, 2005. The ‘Social gap’ In wind farm siting decisions: explanations and policy responses. *Environ. Politics* 14 (4), 460–477.
- Bell, Derek, Gray, Tim, Haggett, Claire, 2013. Re-visiting the ‘Social gap’: public opinion and relations of power in the local politics of wind energy. *Environ. Politics* 22 (1), 115–135.
- Bohn, Christiane, Lant, Christopher, 2009. Welcoming the wind? determinants of wind power development among U.S. states. *Professional Geogr.* 61 (1), 87–100.
- Boudet, Hilary, Clarke, Chris, Bugden, Dylan, Maibach, Edward, Roser-Renouf, Connie, Leiserowitz, Anthony, 2014. ‘Fracking’ controversy and communication: using national survey data to understand public perceptions of hydraulic fracturing. *Energy Policy* 65, 57–67.
- Boudet, Hilary, Bugden, Dylan, Zanolco, Chad, Maibach, Edward, 2016. The effect of industry activities on public support for ‘Fracking’. *Environ. Politics* 25 (4), 593–612.
- Braun, Virginia, Clarke, Victoria, 2006. Using thematic analysis in psychology. *Qual. Res. Psych.* 3 (2), 77–101.
- Cacciatore, Michael A., Scheufele, Dietram A., Shaw, Bret R., 2012. Labeling renewable energies: how the language surrounding biofuels can influence its public acceptance. *Energy Policy* 51, 673–682.
- Canadian Labour Congress, 2000. *Just Transition for Workers During Environmental Change*. CLC, Ottawa, ON, Canada.
- Carley, S., Evans, T.P., Konisky, D.M., 2018. Adaptation, culture, and the energy transition in american coal country. *Energy Res. Soc. Sci.* 37, 133–139.
- Carlisle, Juliet E., Kane, Stephanie L., Solan, David, Bowman, Madeline, Joe, Jeffrey C., 2015. Public attitudes regarding large-scale solar energy development in the US. *Renew. Sustain. Energy Rev.* 48, 835–847.
- Cass, Noel, Walker, Gordon, Devine-Wright, Patrick, 2010. Good neighbours, public relations and bribes: the politics and perceptions of community benefit provision in renewable energy development in the UK. *J. Environ. Policy Plann.* 12 (3), 255–275.
- Ceresola, Ryan, Crowe, Jessica, 2015. Community leaders perspectives on shale development in the new Albany shale. *Rural Soc. Sci.* 30 (1), 62–86.
- Chassot, Sylviane, Hampl, Nina, Wüstenhagen, Rolf, 2014. When energy policy meets free-market capitalists: the moderating influence of worldviews on risk perception and renewable energy investment decisions. *Energy Res. Soc. Sci.* 3, 143–151.
- Clarke, Christopher E., Bugden, Dylan, Sol Hart, P., Stedman, Richard C., Jacquet, Jeffrey B., Evensen, Darrick T.N., Boudet, Hilary S., 2016. How geographic distance and political ideology interact to influence public perception of unconventional oil/natural gas development. *Energy Policy* 97, 301–309.
- Cragg, Michael I., Zhou, Yuyu, Gurney, Kevin, Kahn, Matthew E., 2012. Carbon geography: the political economy of congressional support for legislation intended to mitigate greenhouse gas production. *Econ. Inquiry* 51, 1640–1650.
- Dampier, Jason E.E., Harvey Lemelin, R., Shahi, Chander, Luckai, Nancy, 2014. Small town identity and history's contribution to a response in policy change: a case study of transition from coal to biomass energy conversion. *Energy, Sustain. Soc.* 4 (1), 1–14.
- Delshad, Ashlie, Raymond, Leigh, 2013. Media framing and public attitudes toward biofuels. *Rev. Policy Res.* 30 (2), 190–210.
- Devine-Wright, Patrick, 2011. Public engagement with large-scale renewable energy technologies: Breaking the cycle of NIMBYism. *WIREs Climate Change* 2, 19–26.
- Economic Research Service 2015. U.S. Department of Agriculture. *County Typology Codes*. Available at: [http://www.ers.usda.gov/data-products/county-typology-codes.aspx#.U43Xfy\\_c2Uo](http://www.ers.usda.gov/data-products/county-typology-codes.aspx#.U43Xfy_c2Uo).
- Economic Research Service 2016. U.S. Department of Agriculture. *Oil and Gas Production Data*. Available at: <http://www.ers.usda.gov/data-products/county-level-oil-and-gas-production-in-the-us/documentation-and-maps.aspx>.
- Egan, P.J., Mullin, M., 2017. Climate change: US public opinion. *Ann. Rev. Political Sci.* 20, 209–227.
- Evans, Geoff, Phelan, Liam, 2016. Transitions to a post-carbon society: linking environmental justice and just transition discourses. *Energy Policy* 99, 329–339.
- Evans, Geoff, 2007. A just transition from coal to renewable energy in the hunter valley of new south wales, Australia. *Int. J. Environ. Workplace Employment* 3 (3–4), 175–194.
- Freudenburg, William R., Davidson, Debra J., 2007. Nuclear families and nuclear risks: the effects of gender, geography, and progeny on attitudes toward a nuclear waste facility. *Rural Sociol.* 72 (2), 215–243.
- Freudenburg, William R., 1992. Addictive economies: extractive industries and vulnerable economies in a changing world order. *Rural Sociol.* 57, 305–332.
- Gan, Lin, Eskeland, Gunnar S., Kolshus, Hans H., 2007. Green electricity market development: lessons from europe and the US. *Energy Policy* 35, 144–155.
- Garcia, Jorge H., Cherry, Todd L., Kallbekken, Steffen, Torvanger, Asbjørn, 2016. Willingness to accept local wind energy development: does the compensation mechanism matter? *Energy Policy* 99, 165–173.
- Garrett-Peltier, Heidi, 2017. Green versus brown: comparing the employment impacts of energy efficiency, renewable energy, and fossil fuels using an input-output model. *Econ. Model.* 61, 439–447.
- Goldfarb, Jillian L., Buessing, Maric, Kriner, Douglas L., 2016. Geographic proximity to coal plants and US public support for extending the production tax credit. *Energy Policy* 99, 299–307.



- Gramling, Robert, Freudenburg, William R., 1992. Opportunity-threat, development, and adaptation: toward a comprehensive framework for social impact assessment. *Rural Sociol.* 57 (2), 216–234.
- Gravelle, Timothy B., Lachapelle, Erick, 2015. Politics, proximity and the pipeline: mapping public attitudes toward keystone XL. *Energy Policy* 83, 99–108.
- Greenberg, Michael R., 2009. NIMBY CLAMP, and the location of new nuclear-related facilities: U. S. national and 11 site-specific surveys. *Risk Anal.* 29 (9), 1242–1254.
- Gross, Catherine, 2017. Community perspectives of wind energy in Australia: the application of a justice and community fairness framework to increase social acceptance. *Energy Policy* 35, 2727–2736.
- Haerer, Drew, Pratson, Lincoln, 2015. Employment trends in the U.S. electricity sector, 2008–2012. *Energy Policy* 82, 85–98.
- Haggerty, J.H., Mark Haggerty, N., Rasker, R., 2014. Uneven local benefits of renewable energy in the U. S. west: property tax policy effects. *West Econ. Forum* 13 (1) (Spring).
- Haggett, Claire, 2011. Understanding public responses to offshore wind power. *Energy Policy* 39 (2), 503–510.
- Hansen, J., Kharecha, P., Sato, M., Masson-Delmotte, V., Ackerman, F., Beerling, D.J., Hearty, P.J., Hoegh-Guldberg, O., Hsu, S.L., Parmesan, C., Rockstrom, J., 2013. Assessing dangerous climate change: required reduction of carbon emissions to protect young people, future generations and nature. *PLoS One* 8 (12), e81648.
- Heath, Yuko, Gifford, Robert, 2006. Free market ideology and environmental degradation: the case of belief in global climate change. *Environ. Behav.* 38 (1), 48–71.
- Hess, David J., Mai, Quan D., Pride Brown, Kate, 2016. Red states, green laws: ideology and renewable energy legislation in the United States. *Energy Res. Soc. Sci.* 11, 19–28.
- Hoffarth, M.R., Hodson, G., 2016. Green on the outside, red on the inside: perceived environmentalist threat as a factor explaining political polarization of climate change. *J. Environ. Psychol.* 45, 40–49.
- Howe, P.D., Mildenberger, M., Marlon, J.R., Leiserowitz, A., 2015. Geographic variation in opinions on climate change at state and local scales in the USA. *Nat. Clim. Change* 5 (6), 596–603.
- International Energy Agency, 2017. *Renewables 2017: analysis and forecasts to 2022. Market Report Series.* (Available at: <https://www.iea.org/publications/renewables2017>).
- Jackson, Lynne M., Bitacola, Lisa M., Janes, Leslie M., Esses, Victoria M., 2013. Intergroup ideology and environmental inequality. *Anal. Soc. Issues Public Policy* 13 (1), 327–346.
- Jacquet, Jeffrey B., 2012. Landowner attitudes toward natural gas and wind farm development in northern pennsylvania. *Energy Policy* 50, 677–688.
- Johnstone, P., Hielscher, S., 2017. Phasing out coal, sustaining coal communities? living with technological decline in sustainability pathways. *Extractive Ind. Soc.* 4, 457–461.
- Klick, Holly, Smith, Eric R., 2010. Public understanding of and support for wind power in the United States. *Renew. Energy* 35 (7), 1585–1591.
- Komor, Paul, 2004. *Renewable Energy Policy.* Diebold Institute Monograph. iUniverse, Inc.
- Korosec, Kirsten, 2015. In U.S., There Are Twice as Many Solar Workers as Coal Miners. *Fortune*, January 16, 2015. Available at: <http://fortune.com/2015/01/16/solar-jobs-report-2014>.
- Kriesky, Jill, Goldstein, Bernard D., Zell, Katrina, Beach, Scott, 2013. Differing opinions about natural gas drilling in two adjacent counties with different levels of drilling activity. *Energy Policy* 58, 228–236.
- Ladd, Anthony E., 2017. Meet the new boss, same as the old boss: the continuing hegemony of fossil fuels and hydraulic fracking in the third carbon era. *Humanit Soc.* 41 (1), 13–36.
- Larson, Eric, Krannich, Richard S., 2016. ‘A great idea – But not near me!’ understanding public attitudes about renewable energy facilities. *Soc. Nat. Resour.* 29 (12), 1436–1451.
- Leiserowitz, A., Maibach, E., Roser-Renouf, C., Feinberg, G., & Rosenthal, S., 2017a. Climate change in the American mind: October, 2015. Yale University and George Mason University. New Haven, CT: Yale Program on Climate Change Communication.
- Leiserowitz, A., Maibach, E., Roser-Renouf, C., Rosenthal, S., Cutler, M., & Kotcher, J. (2017b). *Politics & Global Warming, October 2017.* Yale University and George Mason University. New Haven, CT: Yale Program on Climate Change Communication.
- Leitch, Vikki, 2010. Securing planning permission for onshore wind farms: the imperativeness of public participation. *Environ. Law Rev.* 12, 182–199.
- Lewin, Philip, 2017. ‘Coal is not just a job, it’s a way of life’: the cultural politics of coal production in central appalachia. *Soc. Probl.* 0, 1–18.
- Longo, Stefano B., Baker, Joseph O., 2014. Economy ‘Versus’ environment: the influence of economic ideology and political identity on perceived threat of eco-catastrophe. *Sociol. Q* 55 (2), 341–365.
- Makhijani, Arjun, 2016. Beyond a Band-Aid: A Discussion Paper on Protecting Workers and Communities in the Great Energy Transition. Institute for Energy and Environmental Research and Labor Network for Sustainability.
- Marquart-Pyatt, S.T., McCright, A.M., Dietz, T., Dunlap, R.E., 2014. Politics eclipses climate extremes for climate change perceptions. *Glob. Environ. Change* 29, 246–257.
- Mayer, Adam, Malin, Stephanie, Olson-Hazboun, Shawn, 2018. Unhollowing rural america? Rural human capital flight and the demographic consequences of the oil and gas boom. *Popul. Environ.* 39 (3), 219–238.
- McCarthy, James, 2002. First world political ecology: lessons from the wise use movement. *Environ. Plann. A* 34 (7), 1281–1302.
- McCright, Aaron M., Dunlap, Riley E., 2011. The politicization of climate change and polarization in the american public’s views of global warming, 2001–2010. *Sociol. Q.* 52, 155–194.
- Menz, Fredric D., 2005. Green electricity policies in the United States: case study. *Energy Policy* 33, 2398–2410.
- Mildenberger, M., Marlon, J.R., Howe, P.D., Leiserowitz, A., 2017. The spatial distribution of Republican and Democratic climate opinions at state and local scales. *Clim. Change* 145 (3–4), 539–548.
- Morris, Adele C., 2016. Build a Better Future for Coal Workers and Their Communities. *Climate and Energy Economics Discussion Paper: April 25, 2016.* Brookings Institute.
- Mukherjee, Deep, Rahman, Mohammad A., 2016. To drill or not to drill? an econometric analysis of US public opinion. *Energy Policy* 91, 341–351.
- Olson-Hazboun, Shawn K., Krannich, Richard S., Robertson, Peter G., 2016. Public views on renewable energy in the rocky mountain region of the United States: distinct attitudes, exposure, and other key predictors of wind energy. *Energy Res. Soc. Sci.* 21, 167–179.
- Ottinger, Gwen, 2013. The winds of change: environmental justice in energy transitions. *Sci. Culture* 22 (2), 222–229.
- Pasqualetti, Martin, 2011. Opposing wind energy landscapes: a search for a common cause. *Ann. Assoc. Am. Geogr.* 101 (4), 907–917.
- Phadke, Roopali., 2011. Resisting and reconciling big wind: middle landscape politics in the new american west. *Antipode* 43 (3), 754–776.
- Rabe, Barry G., Borick, Christopher P., 2011. Fracking for Natural Gas: Public Opinion on State Policy Options. The Center for Local, State and Urban Policy, Gerald R. Ford School of Public Policy, University of Michigan, Ann Arbor, MI.
- Richardson, L.J., Cleetus, R., Clemmer, S., Deyette, J., 2014. Economic impacts on west virginia from projected future coal production and implications for policymakers. *Environ. Res. Lett.* 9, 1–9.
- Silva, Tony J., Crowe, Jessica A., 2015. The hope-Reality gap: rural community officials’ perceptions of unconventional shale development as a means to increase local population and revitalize resource extraction. *Commun. Dev.* 46 (4), 312–328.
- Smith, Adam., 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations.* Strachan and Cadell, London.
- Stedman, Richard C., Jacquet, Jeffrey B., Filteau, Matthew R., Willits, Fern K., Brasier, Kathryn J., McLaughlin, Diane K., 2012. Marcellus Shale gas development and new boomtown research: views of New York and Pennsylvania residents. *Environ. Pract.* 14 (4), 382–393.
- Stoutenborough, James W., Shi, Liu, Vedlitz, Arnold, 2015. Probing public perceptions on energy: support for a comparative, deep-probing survey design for complex issue domains. *Energy* 81, 406–415.
- Theodori, Gene L., 2009. Paradoxical perceptions of problems associated with unconventional natural gas development. *South Rural Sociol.* 24 (3), 97–117.
- Truelove, Heather B., 2012. Energy source perceptions and policy support: image associations emotional evaluations, and cognitive beliefs. *Energy Policy* 45, 478–489.
- Tvinnereim, Endre, Ivarsflaten, Elisabeth, 2016. Fossil fuels, employment, and support for climate policies. *Energy Policy* 96, 364–371.
- U.S. Department of Energy, 2017. *U.S. Energy and Employment Report: January 2017.* Retrieved June 15, 2017. Available at: <https://energy.gov/downloads/2017-us-energy-and-employment-report>.
- Utah Governor’s Office of Energy Development, 2017. *Energy Overview.* Retrieved January 6, 2017. Available at: <http://energy.utah.gov/resource-areas/energy-information>.
- Wilkinson, Kenneth P., 1991. *The Community in Rural America.* Greenwood Publishing Group.
- Zahran, Sammy, Brody, Samuel D., Vedlitz, Arnold, Grover, Himanshu, Miller, Caitlyn, 2008. Vulnerability and capacity: explaining local commitment to climate-change policy. *Environ. Plan. C: Gov. Policy* 26 (3), 544–562.